

Radiation test setup in Hall A during CREX

Alexandre Camsonne

New radiation detector



View to target

NDX I-400 EPICS Expert Screen

IOC: **iocsoftRadNDX**

10/25/2018 14:31:11 1736831
bootdate heartbeat

Acquisition Switch: **ABORT** / **ACQUIRE** Integration Period: **1.40000** Capacitor Switch: **1000pF**

NDX Detector 1		NDX Detector 2	
	Currents (A)		Dose Rates (mrem/h)
n Bias (Bn)	-2.4601e-12	nCur	1.1006e-09 neutron (nDsRt) 1.2988e+04
g Bias (Bg)	4.0468e-13	gCur	1.1731e-11 gamma (gDsRt) 1.2992e+04
n Calibr (Cn)	1.1910e+13		total (DsRt) 2.5979e+04
g Calibr (Cg)	1.1470e+15		
g Factor (Fg)	1.11200		
NDX Detector 2		NDX Detector 1	
n Bias (Bn)	-4.4413e-13	nCur	9.0969e-11 neutron (nDsRt) 1.0764e+03
g Bias (Bg)	-2.6309e-13	gCur	-1.0220e-12 gamma (gDsRt) -8.4831e+02
n Calibr (Cn)	1.1670e+13		total (DsRt) 2.2812e+02
g Calibr (Cg)	1.1179e+15		
g Factor (Fg)	1.08900		

Auto Bias Time Begin: 2018-11-14 06:00:00 **AutoBias**

Auto Bias Time End: 2018-11-14 09:00:00

Time Format: VVVV-MM-DD HH:MM:SS
-xx, ^xxx<y> where xx is an integer and y is s,h,m,d or w
second,minute,hour,day,week

AutoBias: Successful

For both Detector1 and Detector2:
 $nDsRt = Cn * [(nCur - Bn) - Fg * (gCur - Bg)]$
 $gDsRt = Cg * (gCur - Bg)$
 $DsRt = nDsRt + gDsRt$

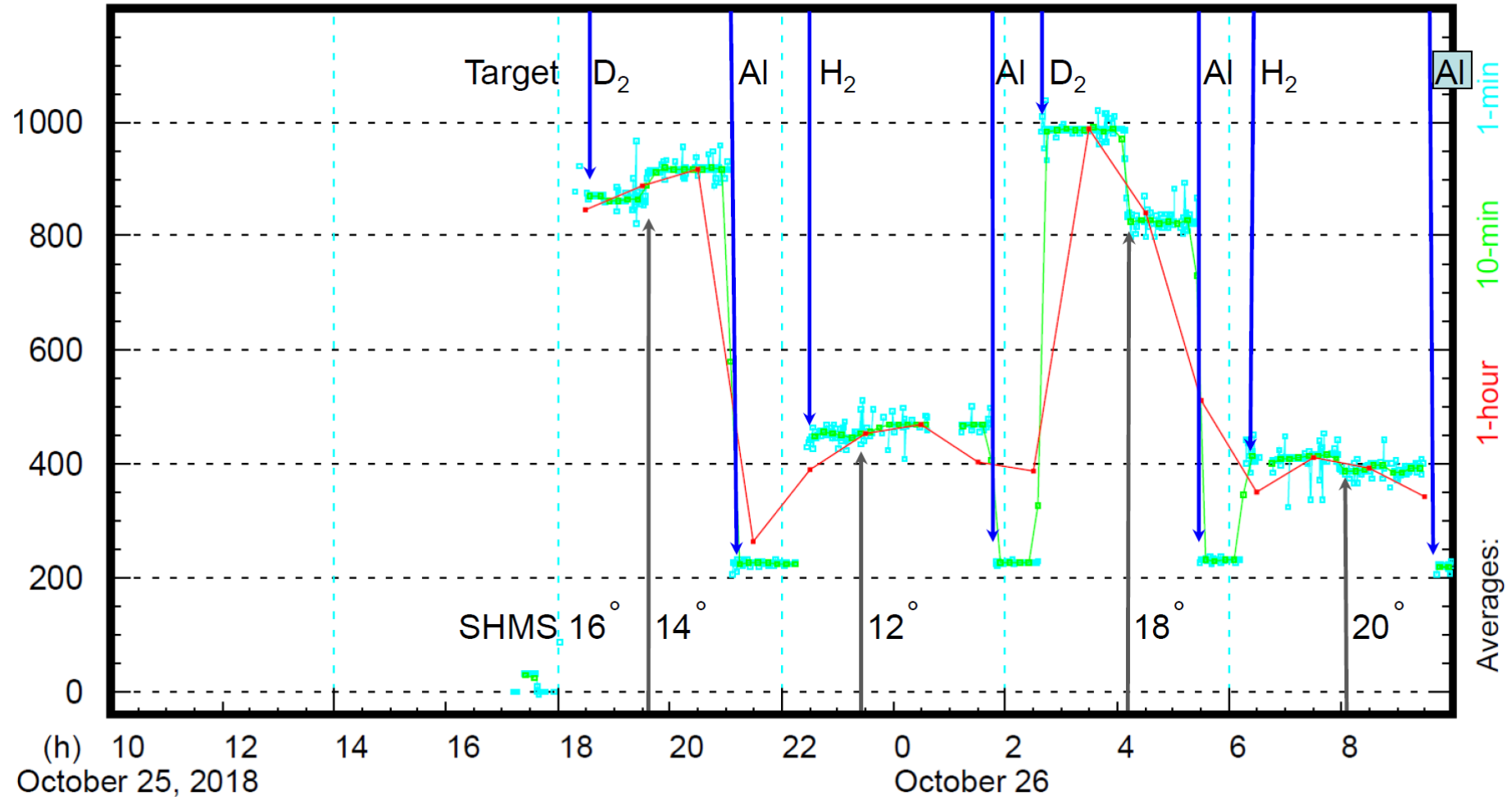
Mean: -2.4601e-12 4.0468e-13 -4.4413e-13 -2.6309e-13

- Neutron dose
- Photon dose

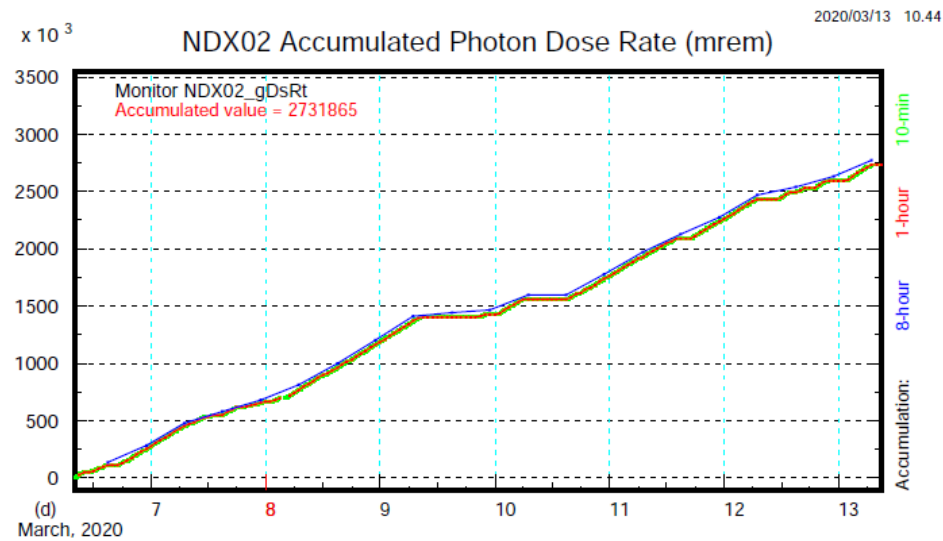
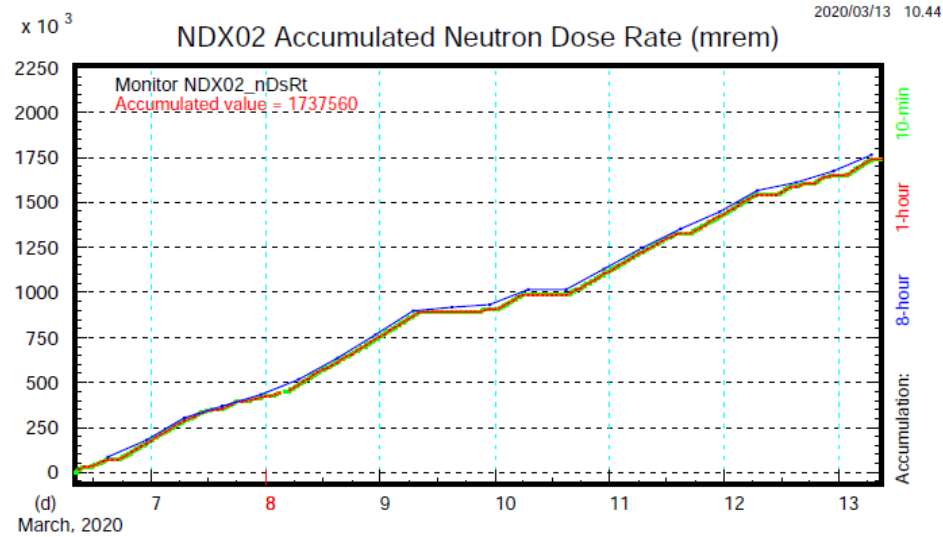
NDX01 Dose Rates per Beam Current

2018/10/26 10:4

Hall C: NDX1 neutron DsRt per Beam Current (mrem/h/ μ A)



Radiation in Hall A during CREX/PREX



Possible test

- Will test GEM electronics and NALU Hawai TOF chip
- High background in PbWO₄
- Irradiation and curing PbWO₄
- Study anode current with new base in high background
- CREX run starts July 26th for 6 weeks